Yamaha TG500 Waveforms, Voices, and Performances

This document attempts to explain the interrelationship between waveforms, voices and performances. These three entities form the heart of the Yamaha TG500's sound system.

Waveforms – the most basic entity

Waveforms are the most basic entity in the TG500. Each waveform is a sample of a device, such as a piano, organ, bell, triangle, accordion, etc.

The TG500 comes with 8 megabytes (Mb) of read-only-memory (ROM) containing 2 banks of pre-installed waveforms. They are listed on pages 309 and 310 in the TG500 Owner's Manual. The first bank, called Preset 1, has 244 waveforms and the second bank, called Preset 2, has 50 waveforms. Don't ask why.

There are two ways you can add new waveforms to your TG500:

- You can add up to 1 Mb of non-volatile RAM memory in the form of two SYEMB06 memory cards. Each card has 512 kilobytes (kb) of memory, you install these cards through the top door of your TG500, and they are as rare as hen's teeth. Cards are currently available from Sector101: http://www.sector101.fsnet.co.uk/ You load your custom waveforms into SYEMB06 memory using the MIDI Sample Dump protocol and these waveforms remain in memory even after you power off your TG500.

- You can add up to 2 Waveform cards. These are essentially ROM memory containing pre-installed waveforms and are inserted in the lower slots of your TG500 marked WAVEFORM 1 and WAVEFORM 2.

Waveform cards were manufactured by Yamaha, such as the W8502 Waveform Card – Rock & Pop II and the W8503 Waveform Card – Ethnic Sounds.

Voices (VCE) – the next step up from Waveforms

A voice is nothing more than a combination of a waveform and a set of effects (Amplitude EG, Filter, LFO, etc.).

ROM-based Voice
If a voice incorporates a waveform from either the Preset 1 or Preset 2 bank (in ROM memory), it does not need an SYEMB06 card or a Waveform card to function properly.

Card-based Voice

If a voice uses a waveform installed on a SYEMB06 card or a Waveform card, then it will not function properly without the optional card installed in your TG500.

The TG500 comes with 4 banks of voices in ROM memory, each bank having 64 voices, and 2 banks of voices in RAM memory, each bank also having 64 voices. You can customize the 2 banks of voices in RAM memory but you cannot change those installed in ROM memory. The 4 banks of ROM voices are listed on pages 303 through 306 (called Preset 1 through Preset 4), and the 2 banks of RAM voices are listed on pages 307 and 308 (called Internal 1 and Internal 2).

There are two ways you can add new voices to your TG500:

- You can customize any of the 128 voices in RAM memory.

- You can add up to 2 MCD64 memory cards. These are essentially RAM memory that can come with pre-installed voices and performances. They are inserted in the upper slots of your TG500 marked DATA 1 and DATA 2.

Each MCD64 memory card is configured for 2 banks of voices. Each bank can hold up to 64 voices. The card in the DATA 1 slot is referenced as banks 1 and 2 and the DATA 2 slot is referenced as banks 3 and 4.

Remember that, if any of the voices on an MCD64 card incorporate a custom waveform that resides on either an SYEMB06 memory card or a Waveform card (card-based voice), then that card must be installed in your TG500 for the voice to function properly.

If every voice on an MCD64 card incorporates a standard waveform from the Preset 1 or Preset 2 bank (ROM-based voice), then the MCD64 card does not need an SYEMB06 card or a Waveform card to function properly.

There are several voice/performance libraries available on the Internet. These are distributed as MIDI files having a .mid or a .syx extension. None of these libraries is supplied with a waveform card. Because of this, you can assume all voices are ROM-based voices incorporating standard waveforms from the Preset 1 or Preset 2 bank.

Pre-formatted MCD64 memory cards were manufactured by Yamaha and come with pre-installed voices and performances, such as the D8502 Voice Data Card – Rock & Pop II and the D8503 Voice Data Card – Ethnic Sounds.

Performances (PFM) – the next step up from Voices

A performance is a collection of up to 4 voices. This feature allows you to play a bass guitar with the left hand and a piano with the right hand, for example.

Just as a card-based voice requires the optional SYEMB06 memory card or Waveform card if it incorporates a waveform installed on either of those cards, a performance requires the same card if it incorporates a card-based voice.

The TG500 comes with 2 banks of performances in ROM memory, each bank having 64 performances, and a single bank of performances in RAM memory, this bank also having 64 performances. You can customize the bank of performances in RAM memory but you cannot change those installed in ROM memory. The 2 banks of ROM performances are listed on pages 300 and 301 (called Preset 1 and Preset 2), and the bank of RAM performances is listed on page 302 (called Internal).

There are two ways you can add new performances to your TG500:

- You can customize any of the 64 performances in RAM memory.

- You can add up to 2 MCD64 memory cards. These are essentially RAM memory that can come with pre-installed voices and performances. They are inserted in the upper slots of your TG500 marked DATA 1 and DATA 2.

Each MCD64 memory card is configured for a single bank of up to 64 performances. The card in the DATA 1 slot is referenced as bank 1 and the DATA 2 slot is referenced as bank 2.

MCD64 Memory Cards – One Last Wrinkle

An MCD64 memory card has a small 2025 button cell inside it that keeps the RAM memory from going to sleep when you power off your TG500. It also has a small slider switch that can be used to protect its memory from being overwritten – a read-only switch.

The above sections on voices and performances lead you to believe that an MCD64 memory card has the capacity to store 2 banks of voices, up to 64 voices in each bank, and a single bank of up to 64 performances. But this is not the complete story.

Each MCD64 memory card is capable of storing twice as much information – 4 banks of voices and 2 banks of performances. However, only 2 banks of voices and 1 bank of performances are accessible at any one time. In other words, memory on an MCD64 memory card is divided into 2 "card banks". You choose which of the 2 card banks you want to access using the UTILITY mode "4: Card" function, "4-1: Bank" parameter. This is explained on page 233 of the TG500 Owner's Manual.

Summary

The following tables summarize information from the previous paragraphs.

Waveform Table

Type of Memory	Name	Waveforms	Page No.
Standard (8Mb ROM)	Preset 1	244	309 – 310
	Preset 2	50	310
SYEMB06 Card (512 kb RAM)		64	282 237 – 248
SYEMB06 Card (512 kb RAM)		64	282 237 – 248
WAVEFORM 1 (ROM)		64	
WAVEFORM 2 (ROM)		64	248

Voice Table

Type of Memory	Name	Voices	Page No.
Standard (384 kb ROM)	Preset 1	64	303
	Preset 2	64	304
	Preset 3	64	305
	Preset 4	64	306
Standard (192 kb RAM)	Internal 1	64	307
	Internal 2	64	308
DATA 1 (64 kb RAM/ROM)	Card 1	64	233 – 236
	Card 2	64	233 – 236
DATA 2 (64 kb RAM/ROM)	Card 3	64	233 – 236
	Card 4	64	233 – 236

Performance Table

Type of Memory	Name	Performances	Page No.
Standard (384 kb ROM)	Preset 1	64	300
	Preset 2	64	301
Standard (192 kb RAM)	Internal	64	302
DATA 1 (64 kb RAM/ROM)	Card 1	64	233 – 236
DATA 2 (64 kb RAM/ROM)	Card 2	64	233 – 236